DETAILED ACTION

Response to Arguments

Applicants request a withdrawal of finality of the prior Office Action, mailed 19 March 2008, however this Office Action was not final, the box on the PTOL-326 was checked by mistake. There is no summary in the Office Action at the conclusion setting forth that the action has been made final or that any new grounds of rejection were necessitated by amendments. Thus, there is no finality to that action or the current action. The case has moved to a new examiner, Lisa Hobbs, Primary Examiner, GAU 1657.

Claim Status

Claims 1, 7, 18, 20-21, 23-24, and 26-34 are active in the case. Claims 2-6, 8-17, 19, 22, 25 have been cancelled by amendment. Claims 1, 7, 18, 20-21, 23-24, and 26-34 are under examination; no claims are withdrawn as drawn to a non-elected invention.

Claim Objection(s)

The objection to claims 4 and 7 is withdrawn in view of the response filed 17 June 2009.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 7, 18, 20-21, 23-24, and 26-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, Applicant recites the term "agent" and "candidate agent" in claims 1 and 7. Applicant has not provided a clear definition in the instant specification which describes what is meant by "agent" or "candidate agent." Applicant states in the instant specification that candidate agents "encompass numerous chemical classes" but are "typically organic compounds" and can be "obtained from a wide variety of sources including libraries of synthetic or natural compounds." Applicant further states that a candidate agent can contain, "for example, a peptide, peptidomimetic, amino acid analog, polynucleotide, nucleotide, nucleotide analog, or other small molecule" on page 5 of the instant specification. Applicant has not provided any particular species or compound which has been used in an experiment or assay for the claims as drafted (i.e., assays for identifying an agent that increases glucose uptake in a mammalian cell).

All other claims depend directly or indirectly from rejected claims and are, therefore, also rejected under USC 112, first paragraph for the reasons set forth above.

The rejection of claims 4, 19, 22, and 25 under 35 U.S.C. 112, first paragraph, in the previous rejection is withdrawn in view of the cancellation of the claims.

Claims 1, 7, 18 and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for mammalian skeletal muscle cells, does not reasonably provide enablement for any and all mammalian cells. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir.1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the breadth of the claims, (2) the nature of the invention, (3) the state of the prior art, (4) the predictability or unpredictability of the art, (5) the relative skill of those in the art, (6) the amount or direction or guidance presented, (7) the presence or absence of working examples, and (8) the quantity of experimentation necessary.

N.B. MPEP 2164.04 states, "[w]hile the analysis and conclusion of a lack of enablement are based on the factors discussed in MPEP § 2164.01(a) and the evidence as a whole, it is not necessary to discuss each factor in the written enablement rejection" and that "[t]he language

should focus on those factors, reasons, and evidence that lead the examiner to conclude that the specification fails to teach how to make and use the claimed invention without undue experimentation, or that the scope of any enablement provided to one skilled in the art is not commensurate with the scope of protection sought by the claims." Accordingly, the Factors most relevant to the instant rejection are addressed in detail below.

1-2 .Breadth of the claims and the nature of the invention..

In regards to the method of the invention and the breadth of the claims the broadest interpretation that applies is a method for identifying agents which increase store-mediated calcium entry into mammalian cells and which also increase glucose uptake in mammalian cells.

5. The relative skill in the art.

The relative skill in the art as it relates to the method of the invention is characterized by that of a M.D. or Ph. D. level individual.

6-7. The amount of guidance present and the existence of working examples.

The working examples in the instant specification do not provide any guidance beyond using skeletal muscle cells in experiments for determining 2-deoxyglucose uptake in the presence and absence of a known antagonist of store-mediated calcium entry both with and without insulin. Applicant does not provide any guidance for identifying agents which increase glucose uptake in any mammalian cells other than skeletal muscle cells, nor does Applicant provide any particular guidance or examples of any specific agents which increase glucose uptake in either mammalian cells or in skeletal muscle cells specifically.

8. The quantity of experimentation necessary.

The amount of experimentation that is required is undue: while the assay method is routine, a method of identifying agents which increase glucose uptake in any and all mammalian cells is not routine and requires more experimentation. Therefore, in view of the overly broad scope of the claims, and the lack of guidance and working examples provided in the specification, undue experimentation would be necessary for a skilled artisan to make and use the entire scope of the claimed invention.

It must be noted that the issue in this case is the breadth of the claims in light of the predictability of the art as determined by the number of working examples, the skill level of the artisan and the guidance presented in the instant specification and the prior art of record. The Applicants make and test position is inconsistent with the decisions of In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) where it is stated that "... scope of claims must bear a reasonable correlation to scope of enablement provided by the specification to persons of ordinary skill in the art...". Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation Ieft to those skilled in the art is unnecessarily and improperly extensive and undue. See In re Wands, 858 F.2d at 737, 8 USPQZd at 1404 (Fed. Cir. 1988). Therefore, for the instant specification to be enabling, it needs to provide direction/guidance regarding an acceptable number of different mammalian cells.

Absent sufficient guidance/direction one of skill in the art would not be able to practice the claimed invention commensurate in scope with the claims. Thus, for all these reasons, the specification is not considered to be enabling for one skilled in the art to make and use the claimed invention as the amount of experimentation required is undue, due to the broad scope of the claims and the lack of guidance and insufficient working examples provided in the

specification, attempting to test all the different types of cells encompassed by the claimed invention would constitute undue experimentation. Therefore, applicants have not provided sufficient guidance to enable one of skill in the art to make and use the claimed invention in a manner that reasonably correlates with the scope of the claims, to be considered enabling.

The rejection of claims 4 and 19 under 35 U.S.C. 112, first paragraph, in the previous rejection is withdrawn in view of the cancellation of the claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 7, 18, 20-21, 23-24, and 26-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "determining whether the candidate agent increases store-mediated Ca2+ entry (SMCE) into the cell" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim. In particular, it is unclear from the preamble of claim 1 how the step of lines 4-5 relates to a method of identifying an agent that increases glucose uptake in a mammalian cell, since Applicant has not related an increase in store-mediated Ca2+ entry with an increase in glucose uptake in the instant claim.

Claim 7 recites the limitation "wherein the candidate agent increases SMCE into the cell" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. In particular, it is unclear from the preamble of claim 1 how the phrase of lines 3-4 relates to a method of

identifying an agent that increases glucose uptake in a mammalian cell, since Applicant has not related an increase in SMCE with an increase in glucose uptake in the instant claim.

All other claims depend directly or indirectly from rejected claims and are, therefore, also rejected under USC 112, second paragraph for the reasons set forth above.

The rejection of claims 4, 19, 22, and 25 under 35 U.S.C. 112, second paragraph, in the previous rejection is withdrawn in view of the cancellation of the claims.

The rejection of claims 4, 19, 22, and 25 under 35 U.S.C. 112, second paragraph, regarding "contacting a candidate agent with a SMCE-regulting factor", which was maintained in the previous Office Action of 19 March 2008, is withdrawn in view of the cancellation of the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7, 18, 20, 27-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Youn et al (Amer. J. Physiol. 1991).

A method is claimed for identifying an agent that increases glucose uptake in a mammalian cell comprising contacting a mammalian cell with a candidate agent, determining

whether the candidate agent increases store-mediated Ca2+ entry into the cell, and determining whether the candidate agent increases glucose uptake in the cell.

Youn et al teach a method of screening compounds for the ability to increase glucose transport activity in mammalian cells (e.g., in skeletal muscle cells, in particular) and for the ability to increase cytoplasmic Ca^{2+} by accelerating the release of Ca^{2+} from the sarcoplasmic reticulum, or SR, into the cells (i.e., increasing store-mediated Ca^{2+} entry into the cell). Youn et al teach that rat skeletal muscle cells are preloaded with tagged calcium and then contacted with the compound W-7, (*N*-(6-aminohexyl)-5-chloro-1-naphthalenesulfonamide), which induces release of Ca^{2+} from the SR into the cytoplasm. Youn et al teach that insulin is provided in the assays for glucose transport and calcium depletion (see, for example page C555, col. 2), therefore teaching that insulin-stimulated glucose transport is evaluated in the assays (see, for example, Abstract, pg. C556 col. 1, pg. C557 col. 1-2, pg. C559 col. 1-2, and pg. C560 col. 1-2).

Therefore, the reference is deemed to anticipate the instant claims above.

The rejection of claims 4, 19, 22, 25 under 35 U.S.C. 102(b) is withdrawn in view of the cancellation of the claims. The rejection of claims 21, 23-24, and 26 under 35 U.S.C. 102(b) is withdrawn in view of the response and applicants arguments presented 17 June 2009 regarding the specific finding and efficacy of the assay for skeletal muscle cells.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa J. Hobbs whose telephone number is 571-272-3373. The examiner can normally be reached on Hotelling - Generally, 9-6 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lisa J. Hobbs/
Primary Examiner
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